

REMARKS

Applicants would like to express appreciation to the Examiner for the detailed Official Action provided. Upon entry of the present paper, claim 1 will have been amended, claims 8-9 will have been added and claims 3-4 and 6-7 will have been canceled without prejudice or disclaimer. Claims 1-2, 5 and 8-9 are pending before the Examiner.

Rejections under 35 U.S.C. §§ 101 and 112

The Examiner rejected claims 6-7 under 35 U.S.C. §§ 101 and 112, second paragraph as being directed to non-statutory subject matter and as being indefinite. Without agreeing to the propriety of the Examiner's rejections and solely in order to expedite the patent application process, Applicants have elected to cancel claims 6-7 without prejudice or disclaimer, and have presented independent method claims 8 and 9. Applicants note that these newly-presented claims generally correspond to canceled claims 6-7 and are patentable under at least 35 U.S.C. §§ 101 and 112, and the limitations of which Applicants submit are not disclosed by the references of record. No new matter has been added. It is thus respectfully requested that the Examiner withdraw these rejections.

Rejections under 35 U.S.C. § 103

The Examiner rejected claims 1-4 under 35 U.S.C. § 103(a) as being unpatentable over Japanese Laid-Open Publication No. 10-038413 (KATSUBE, discussed beginning page 1 of Applicants' specification) in view of U.S. Patent No. 6,203,598 (HASEGAWA) and in view of JP 05-293335 (SHIGAKI); and rejected claim 5 under 35 U.S.C. § 103(a) as being unpatentable over Japanese

KATSUBE in view of HASEGAWA and in view of SHIGAKI, and in further view of U.S. Patent No. 6,506,348 (OCHI). Applicants respectfully traverse the Examiner's rejection and note that the present claimed invention is markedly different from the cited references.

Regarding claims 1 and 3, Applicants note that neither KATSUBE, HASEGAWA nor SHIGAKI, when taken alone or in any proper combination, disclose or render obvious at least the claimed limitation of a blow-off device configured to discharge heated gas from the inside of the exhaust gas duct to the outside of the exhaust gas duct, as recited in claim 1. In this regard, without agreeing to the propriety of the Examiner's rejection and solely in order to expedite the patent application process, Applicants have elected to amend claim 1 to generally incorporate the limitations of dependent claim 3 (and have canceled claims 3-4 without prejudice or disclaimer) and to clarify that the blow-off device is configured to discharge heated gas from the inside of the exhaust gas duct to the outside of the exhaust gas duct.

To the contrary, in the "blow-off device" of SHIGAKI (identified by the Examiner as paragraph 21, "in leakage of the thermal oil 17, or an outbreak of a fire, a steam blows off from the steamy exhaust nozzle 33 ..."), steam is introduced into heating medium heater case 9 from steam outlet 33. This is evidenced by an arrow of steam outlet 33 turning to the heating medium heater case 9 in Figure 1 of SHIGAKI. In other words, steam is introduced into a heating medium heater case 9 from the outside of exhaust gas processing system.

However, the present claimed invention, heated gas is discharged from the inside of the exhaust gas duct to the outside of the exhaust gas duct.

Further, in SHIGAKI, steam is introduced into the heating medium heater case 9 for the purpose of extinguishing a fire. In contrast to the invention of claim 1, in SHIGAKI, the discharge (introduction) direction of steam and gas are in opposite directions. For example, in SHIGAKI, when a damper 9a of the entrance side of a heating medium heater 8 and a damper 9b of the NOx removal device side of the heater 8 are closed, the inner space of the heating medium heater 8 is closed. Further, steam is introduced into this closed space and extinguishes a fire of heating medium heater 8.

In the prior art, no escape for the high-temperature residual heat (e.g., of approximately 90-150°C), which is discharged from a reheater during a shutdown of the desulfurizer, has been provided, and problems such heat deformation of the resin element of the mist eliminator 8 present in the outlet duct 7 occurs, and a thermal degradation occurs on the corrosion-preventive lining of the inner surface of the outlet duct 7 (See pages 3 lines 21- pages 4 lines 5).

A non-limiting feature of the present invention efficiently outwardly discharges high-temperature heat released from a reheater 9 during a shutdown of a desulfurizer, prevents damage to equipment and corrosion preventing lining material, and ensure long-time stabilized use of an exhaust gas processing device (See pages 4, lines 6-11 of Applicants' specification).

According to a non-limiting feature of configuration (a) of claim 1, even when heat is dissipated from the reheater 9 during a shutdown of the absorption

tower 6, by outwardly discharging the dissipated heat by the heat suppression (e.g., heat radiation) device, the possibility of damaging the nonmetallic equipment of the exhaust gas processing device is reduced (See, page 5, lines 2-7).

Moreover, according to another non-limiting feature of configuration (a), between the GGH reheater 9 and mist eliminator 8 provided in the outlet duct 7 at an upstream side of the GGH reheater 9, a blow-off device (as one non-limiting example of the heat suppression device) including a blow-off valve 11 and a blow-off pipeline 12 is installed. System operation is such that, simultaneously with a shutdown of the absorption tower 6 (by a stop of the desulfurization fan 4, the inlet damper 3 and outlet damper 10 are also closed), the blow-off valve 11 is fully opened from a fully closed condition, the processed exhaust gas g2 about to rise in temperature owing to residual heat of a heat medium of the GGH reheater 9 is outwardly discharged at an allowable temperature limit or less of a resin internal component such as an element of the mist eliminator 8 and a corrosion preventive lining material. In the aforementioned blow-off device, the risk of damage to the resin internal component such as an element of the mist eliminator 8 and the corrosion preventive lining material, such as thermal deformation, thermal degradation or the like during shutdown of the absorption tower, is greatly reduced. Accordingly, use of a desulfurizer stable in performance and structure can be achieved for a long period of time (pages 12 lines 19- pages 13 lines 17).

In addition, since no such claimed blow-off device exists in an exhaust gas processing device of the prior art, it has been necessary to provide, for oxidizing air 15 to be supplied to an oxidizing mixer 14 to obtain high-quality gypsum, as well, a new releasing line to outwardly release the same from the inside of the system during a shutdown of the absorbing tower 6. However, in the above-described embodiment with respect to a non-limiting feature of configuration (a), since the oxidizing air 15 can be outwardly discharged from the inside of the system even during a shutdown of the absorption tower 6 by utilizing the blow-off device (composed of, *e.g.*, the blow-off valve 11 and blow-off pipeline 12), the oxidizing air 15 can be continuously supplied to an adsorption liquid during a shutdown of the absorption tower 6, as well, according to the necessity (See pages 14 lines 11- pages 15 lines 1).

As described in Applicants' specification at, *inter alia*, page 15, lines 2-12, according to a non-limiting embodiment of configuration (b), at the location of the blow-off device, a thermometer 18 for measuring the inner ambient air temperature of the outlet duct 7 between the mist eliminator 8 of an outlet portion of the absorption tower 6 and GGH reheater 9, and as shown in Fig. 2, a spray nozzle pipeline 19 for washing a mist eliminator element with a washing liquid may attached to the rear surface and/or front surface of the mist eliminator 8. Spray of this washing liquid makes it possible to wash the inner wall surface of an exhaust gas duct and the periphery thereof.

According to the non-limiting feature of configuration (b) of claim 1, when a measured temperature of the thermometer 18 is greater than or equal to a set

temperature, a washing liquid for washing an element of the mist eliminator 8 and/or an exhaust gas duct inner wall surface and the periphery thereof is sprayed from the spray nozzle pipeline 19 (See page 7 lines 23- pages 8 lines 4). By starting to spray the washing liquid from the spray nozzle pipeline 19 when the thermometer 18 reads a set temperature, the nonmetallic mist eliminator element and the corrosion-preventive material of the inner wall surface of the outlet duct 7 and the periphery thereof can be protected (pages 15, lines 13-17).

According to a non-limiting feature of configuration (c) of claim 1, the possibility of damaging the nonmetallic equipment of the exhaust gas processing device is reduced (See page 8, lines 18-19). In configuration (c), the aforementioned benefits with respect to Fig. 1 and Fig. 2 are also attained (See pages 18, lines 19-20).

According to a non-limiting feature of invention, an advantage of the heat suppression device of claim 1 is:

(A) High-temperature heat (of, e.g., approximately 90-150°C) released from a reheater (e.g., a GGH reheater or an SGH and a GGH reheater) is efficiently outwardly discharged during a shutdown of a desulfurizer provided with an absorption tower, or the nonmetallic material of equipment installed in the exhaust gas duct is cooled with a washing liquid, and the risk of damage to the inner wall surface of the exhaust gas duct and the internal component of equipment installed in the exhaust gas duct and the corrosion preventing lining material is greatly reduced, and extended-duration stabilized use of a desulfurizer can be achieved; and

(B) Since the heat suppression device can be effectively utilized for supplying oxidizing air during a shutdown of the absorption tower, as well, an additional economic effect is provided (See pages 20, lines 2-16).

Further, with respect to the Examiner's assertion that it would have been obvious to use claimed non-leak feature of claim 1 with the device of KATSUBE, Applicants note that the Examiner's assertion is entirely without support, and respectfully request that the Examiner provide support for such assertion by identifying, *e.g.*, a reference, should the Examiner choose to maintain this rejection.

Applicants thus submit that, when taken alone or in any proper combination, at least configurations (a), (b) and (c) of claim 1 are neither disclosed or rendered obvious by the applied references.

With respect to rejected dependent claims 2 and 5, as these claims are dependent from allowable independent claim 1, which is allowable for at least the reasons discussed *supra*, these dependent claims are also allowable for at least these reasons. Further, all dependent claims recite additional features which further define the present invention over the references of record. It is thus respectfully submitted that all pending claims are patentable over the references of record. Applicants thus respectfully request reconsideration and withdrawal of the rejection of the claims under 35 U.S.C. § 103(a), and an early indication of the allowance of all pending claims.

SUMMARY AND CONCLUSION

In view of the fact that none of the art of record, whether considered alone, or in any proper combination thereof, discloses or otherwise renders unpatentable the present invention, reconsideration of the Examiner's action and allowance of the present application are respectfully requested and are believed to be appropriate.

Applicants note that this amendment is being made to advance prosecution of the application to allowance, and should not be considered as surrendering equivalents of the territory between the claims prior to the present amendment and the amended claims. Further, no acquiescence as to the propriety of the Examiner's rejection is made by the present amendment. All other amendments to the claims which have been made in this amendment, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Should there be any questions, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully Submitted,
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